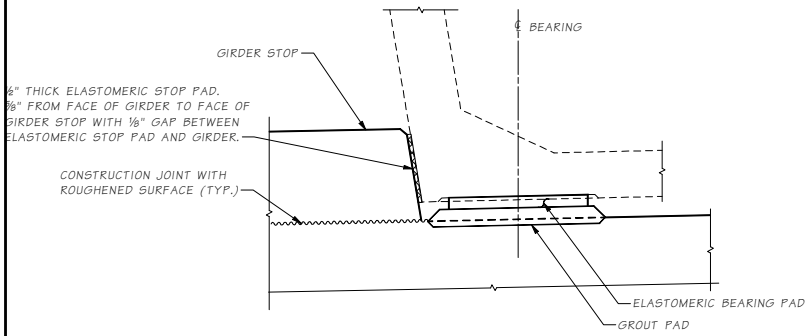
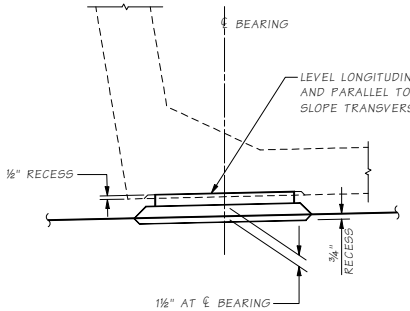
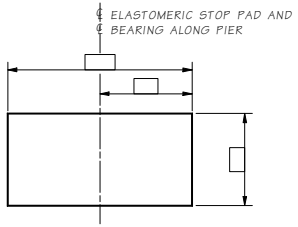


SECTION G



GROUT PAD ELEVATION

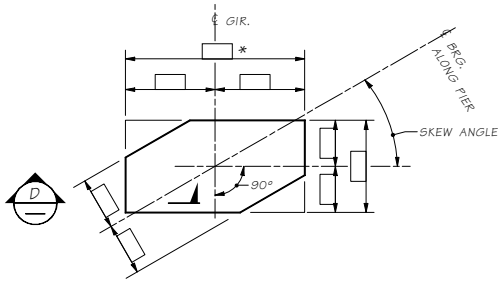


ELASTOMERIC STOP PAD

DUROMETER HARDNESS = 60

NOTES:

1. GIRDER STOPS SHALL BE CONSTRUCTED AFTER GIRDER PLACEMENT.
2. ELASTOMERIC STOP PADS SHALL BE CEMENTED TO GIRDER STOP WITH APPROVED ADHESIVE.

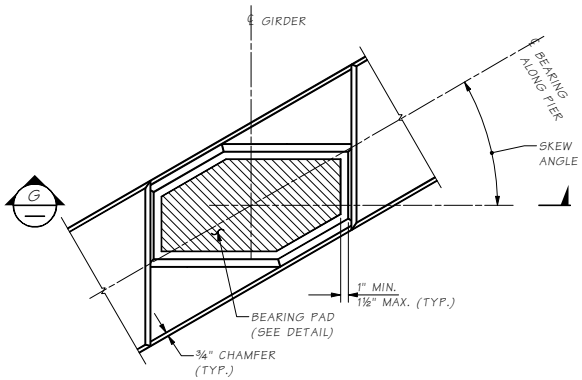


BEARING PAD

LAMINATED ELASTOMERIC BRIDGE PAD ☐ THICK (☐ SHIMS).

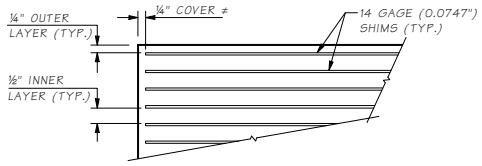
Skew angle shown at 30°.

* The edge of the bearing pad shall be set at 1" minimum to 6" maximum from the edge of the bottom flange.



GROUT PAD DETAIL

Skew angle shown at 30°.



SECTION D

≠ ⅛" for pad thickness ≤ 3"
¼" for 3" < pad thickness ≤ 7"
½" for pad thickness > 7"

BEARING DESIGN TABLE	
SERVICE - I LIMIT STATE	
DEAD LOAD REACTION	KIPS
LIVE LOAD REACTION (W/O IMPACT)	KIPS
UNLOADED HEIGHT	IN.
LOADED HEIGHT (DL)	IN.
DUROMETER HARDNESS	60

Bridge Design Engr:	M:\STANDARDS\Girders\Trapezoidal Tubs\TRAPEZOIDAL TUB MISC DETAILS.MAN				REGION NO.	STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
Supervisor					10	WASH.			
Designed By									
Checked By					JOB NUMBER				
Detailed By									
Bridge Projects Engr.									
Prelim Plan By									
Architect/Specialist	DATE	REVISION		BY	APP'D				

BRIDGE AND STRUCTURES OFFICE

Washington State Department of Transportation

STANDARD PRESTRESSED CONCRETE GIRDERS

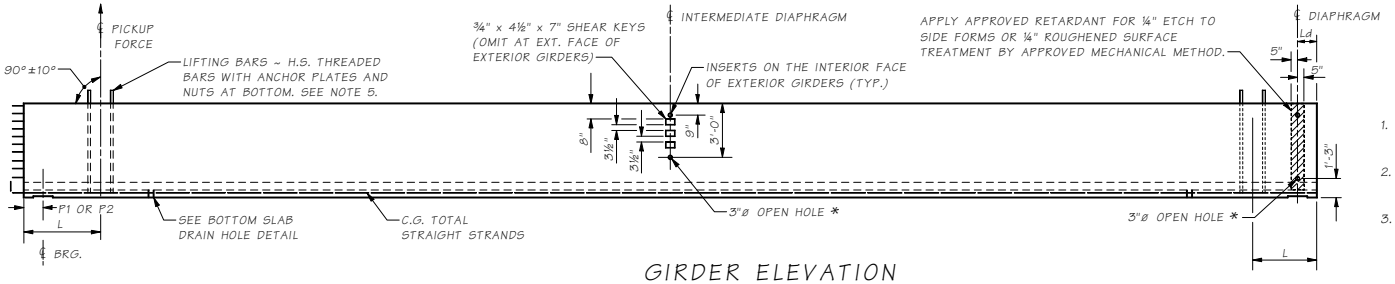
PRESTRESSED TRAPEZOIDAL TUB GIRDER MISCELLANEOUS BEARING DETAILS

BRIDGE SHEET NO. SHEET OF SHEETS

SHEET JOB NO. SR

5.6-A16-1

Fri Feb 01 14:28:46 2008

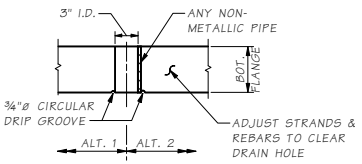


GIRDER ELEVATION

* OMIT HOLES AND PLACE INSERTS ON THE INTERIOR FACE OF EXTERIOR GIRDERS. PLACE HOLES AND INSERTS PARALLEL TO SKEW. INSERTS SHALL BE 1" BURKE HI-TENSILE, LANCASTER MALLEABLE, DAYTON-SUPERIOR F-62 FLARED THIN SLAB (1" x 4⅝") FERRULE OR APPROVED EQUAL. (TYP.)

END TYPE A

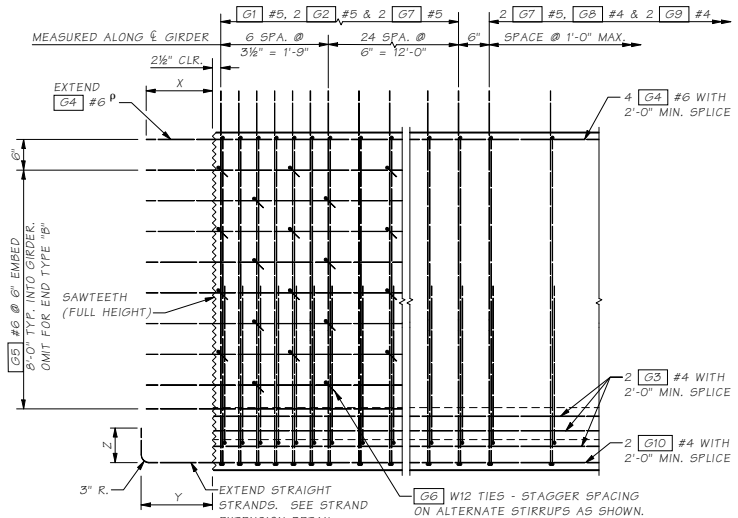
END TYPE B



BOTTOM SLAB DRAIN HOLE DETAIL

NOTES:

1. PLAN LENGTH SHALL BE INCREASED AS NECESSARY TO COMPENSATE FOR SHORTENING DUE TO PRESTRESS AND SHRINKAGE.
2. ALL PRETENSIONED STRANDS SHALL BE [½"ø OR 0.6"ø] LOW RELAXATION STRANDS (AASHTO M203 GRADE 270.)
3. FOR END TYPES A, C AND D CUT ALL STRANDS FLUSH WITH THE GIRDER ENDS AND PAINT WITH AN APPROVED EPOXY RESIN, EXCEPT FOR EXTENDED STRANDS AS SHOWN. FOR END TYPE B CUT ALL STRANDS 1" BELOW CONCRETE SURFACE AND GROUT WITH AN APPROVED EPOXY GROUT.
4. THE TOP SURFACE OF THE GIRDER WEBS SHALL BE ROUGHENED IN ACCORDANCE WITH SECTION 6-02.3(25)H OF THE STANDARD SPECIFICATIONS.
5. LIFTING EMBEDMENTS SHALL BE INSTALLED IN ACCORDANCE WITH SECTION 6-02.3(25)L OF THE STANDARD SPECIFICATIONS.
6. CAUTION SHALL BE EXERCISED IN HANDLING AND PLACING GIRDERS. ALL GIRDERS SHALL BE CHECKED BY THE CONTRACTOR TO ENSURE THAT THEY ARE BRACED ADEQUATELY TO PREVENT TIPPING AND TO CONTROL LATERAL BENDING DURING SHIPPING.
7. FORMS FOR BEARING PAD RECESSES SHALL BE CONSTRUCTED AND FASTENED IN SUCH A MANNER AS TO NOT CAUSE DAMAGE TO THE GIRDER DURING THE STRAND RELEASE OPERATION.

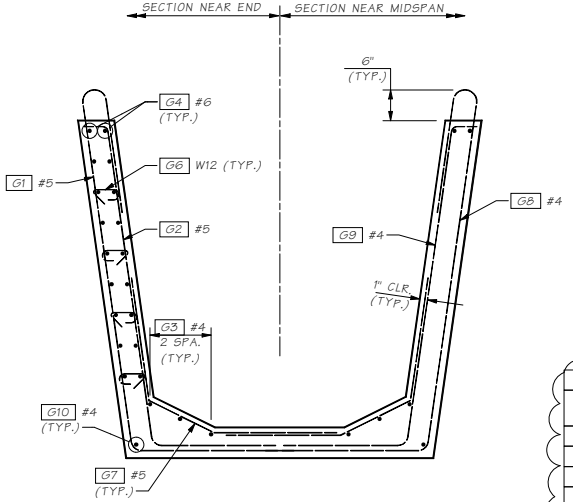


P FIELD BENDING REQUIRED TO OBTAIN 1½" CONCRETE COVER AT PAVEMENT SEAT.

TYPICAL END ELEVATION

END TYPE "C" SHOWN, OTHER END TYPES SIMILAR

Stirrup spacing shall be determined by the designer



TYPICAL SECTION

¼ points of span for span lengths over 120'-0".
⅓ points of span for span lengths 80'-0" TO 120'-0".
Midpoint of span for span lengths 40'-0" TO 80'-0".

¼ points of span for span lengths over 120'-0".
⅓ points of span for span lengths 80'-0" TO 120'-0".
Midpoint of span for span lengths 40'-0" TO 80'-0".

Notes to designer

DIAPHRAGM TYPE	END TYPE	BEARING RECESS	X	Y	Z	SAWTEETH
End diaphragm on girder	A	YES	1'-10"	1'-6"	9"	YES
"L" Abutment	B	YES	0	0	0	NO
Hinge diaph. at interm. pier	C	NO	1'-10"	1'-6"	9"	YES
Fixed diaph. at interm. pier	D	NO	1'-10"	ALT. 1 OR ALT. 2 STRAND EXTEN.		YES
Multiple simple spans at intermediate pier	E	YES	0	0	0	NO

Bridge Design Engr.	M:\STANDARDS\Girders\Trapezoidal Tubs\TRAPEZOIDAL TUB 1.MAN				REGION NO.	STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
Supervisor					10	WASH.			
Designed By					JOB NUMBER				
Checked By									
Detailed By									
Bridge Projects Engr.									
Prelim Plan By									
Architect/Specialist	DATE	REVISION		BY	APP'D				

BRIDGE AND STRUCTURES OFFICE

Washington State Department of Transportation

STANDARD PRESTRESSED CONCRETE GIRDERS

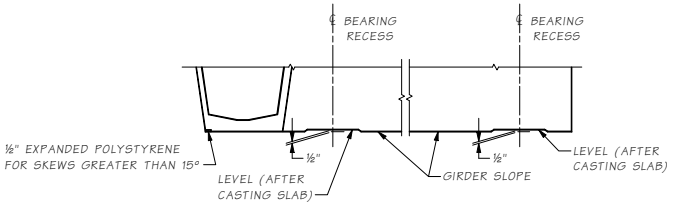
TUB GIRDER DETAILS 1 OF 3

BRIDGE SHEET NO.

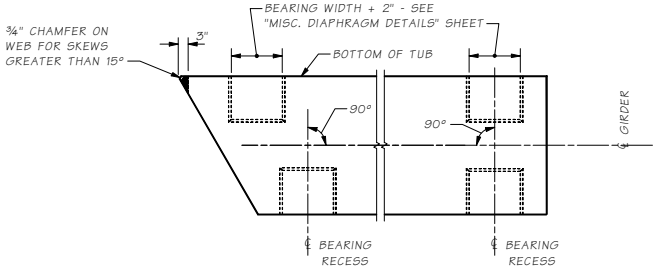
SHEET OF SHEETS

SHEET 5.6-A16-2 JOB NO. SR

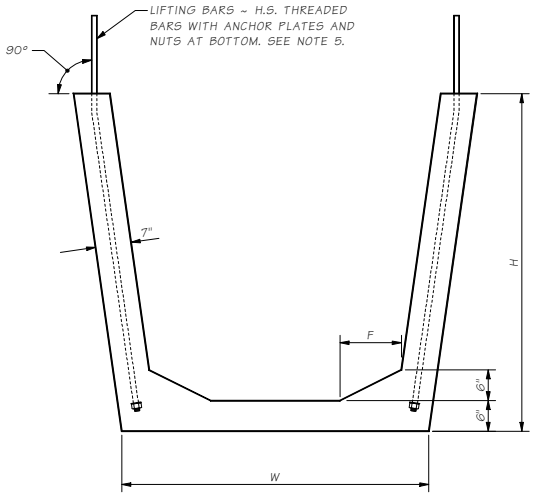
Fri Feb 01 14:28:50 2008



ELEVATION



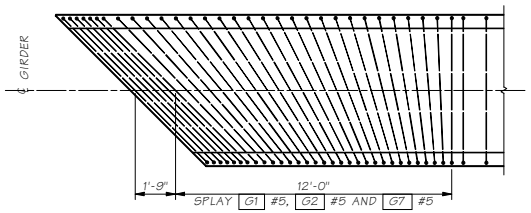
PLAN



TYPICAL SECTION

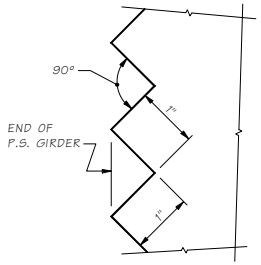
GIRDER	F	H	W
U54G4	1'-0"	4'-6"	4'-0"
U54G5	1'-0"	4'-6"	5'-0"
U66G4	1'-6"	5'-6"	4'-0"
U66G5	1'-6"	5'-6"	5'-0"

BOTTOM OF TUB SPALL PROTECTION



TRANSVERSE REINFORCING AT SKEWED ENDS

ONLY TRANSVERSE REINFORCING SHOWN



SAWTOOTH DETAILS

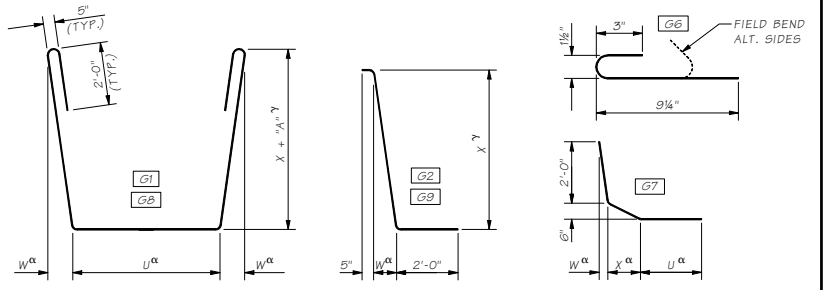
SAWTEETH ARE FULL WIDTH. USE SAWTOOTH KEYS FROM BOTTOM OF BOTTOM FLANGE TO BOTTOM OF LOWEST HARPED STRAND AS WELL AS TOP FLANGE ADJACENT TO HARPED STRANDS AS SHOWN ON "TYPICAL END ELEVATION" THIS SHEET.

MARK	LOCATION	SIZE	U	W	X	
G1	STIRRUPS, OUTSIDE WEB	5				
G2	STIRRUPS, INSIDE WEB	5				
G3	LONGITUDINAL BOTTOM FLANGE	4				STR.
G4	LONGITUDINAL TOP	6				STR.
G5	LONGITUDINAL WEB	6				STR.
G6	WEB TIE	W12 δ				
G7	BOTTOM FLANGE	5				
G8	STIRRUP, OUTSIDE WEB	4				
G9	STIRRUP, INSIDE WEB	4				
G10	LONGITUDINAL BOTTOM	4				STR.

BENDING DIAGRAM (ALL DIMENSIONS ARE OUT TO OUT)

NOTE: FOR DIMENSION "A", SEE "GIRDER SCHEDULE"

α - VARIES FOR SKEWED ENDS.
δ - #3 OR #4 MAY BE SUBSTITUTED. FIELD BENDING IS OPTIONAL.
γ - SHALL BE CHECKED FOR EFFECT OF VERTICAL CURVE.



Bridge Design Engr.	M:\STANDARDS\Girders\Trapezoidal Tubs\TRAPEZOIDAL TUB 2.MAN								
Supervisor					REGION NO.	STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
Designed By					10	WASH.			
Checked By					JOB NUMBER				
Detailed By									
Bridge Projects Engr.									
Prelim Plan By									
Architect/Specialist	DATE	REVISION	BY	APP'D					

BRIDGE AND STRUCTURES OFFICE

Washington State Department of Transportation

STANDARD PRESTRESSED CONCRETE GIRDERS

PRESTRESSED TRAPEZOIDAL TUB GIRDER DETAILS 2 OF 3

BRIDGE SHEET NO. SHEET OF SHEETS

SR . SHEET 2 JOB NO. 5.6-A16-3

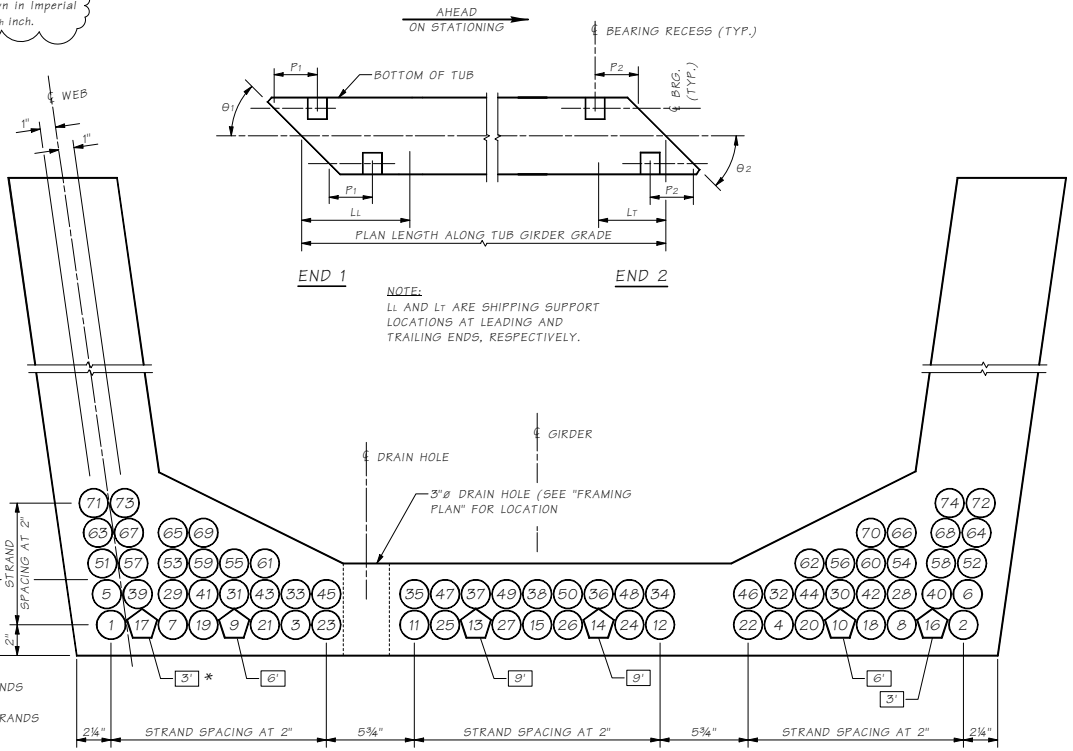
Fri Feb 01 14:28:55 2008

GIRDER SCHEDULE

DIMENSION "A" AT ℄ BEARINGS = BASED ON GIRDER DEFLECTION = "D" AT TIME OF SLAB PLACEMENT (120 DAYS)

SPAN	GIRDER	END 1 TYPE	END 2 TYPE	L	LL	LT	θ1 (DEG.)	θ2 (DEG.)	P1	P2	PLAN LENGTH (ALONG GIRDER GRADE)	MIN. CONC. COMP. STRENGTH AT FINAL F'C (KSI)	MIN. CONC. COMP. STRENGTH AT RELEASE F'CI (KSI)	NO. OF STRANDS	JACKING FORCE (KIPS)	LOCATION OF C.G. STRANDS E	C	D @ 40 DAYS	D @ 120 DAYS	Ld
-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

NOTE:
Dimensions shall be shown in imperial units to the nearest 1/8th inch.



1 = BONDED STRANDS

17 = DEBONDED STRANDS

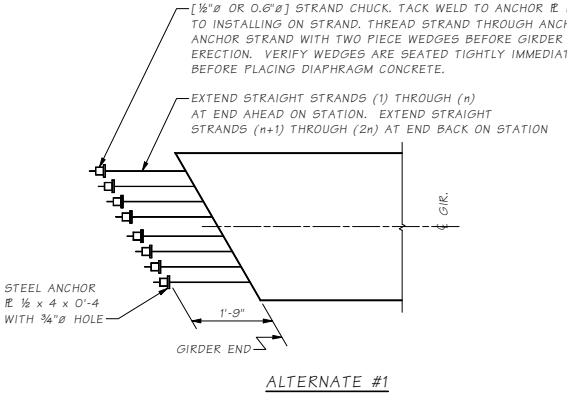
* DISTANCE INDICATES LENGTH THAT EACH END OF STRAND IS TO BE SLEEVED TO PREVENT BOND. (TYP.)

Debonding to be determined by the designer

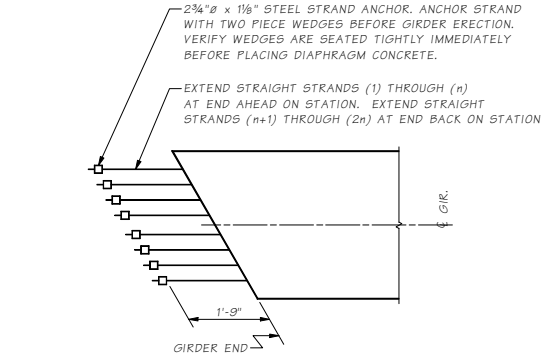
STRAND PATTERN

STRAND STRESSING SEQUENCE SHALL BE AS SHOWN (1), (2) ETC.

NOTE:
LL AND LT ARE SHIPPING SUPPORT LOCATIONS AT LEADING AND TRAILING ENDS, RESPECTIVELY.



ALTERNATE #1



ALTERNATE #2

STRAND EXTENSION DETAIL

TOTAL NUMBER OF EXTENDED STRANDS = ☐

Number of extended strands shall be determined by the designer.

Bridge Design Engr.	M:\STANDARDS\Girders\Trapezoidal Tubs\TRAPEZOIDAL TUB 3.MAN									
Supervisor						REGION NO.	STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
Designed By						10	WASH.			
Checked By						JOB NUMBER				
Detailed By										
Bridge Projects Engr.										
Prelim Plan By										
Architect/Specialist	DATE	REVISION		BY	APP'D					

BRIDGE AND STRUCTURES OFFICE

Washington State Department of Transportation

STANDARD PRESTRESSED CONCRETE GIRDERS

TUB GIRDER DETAILS 3 OF 3

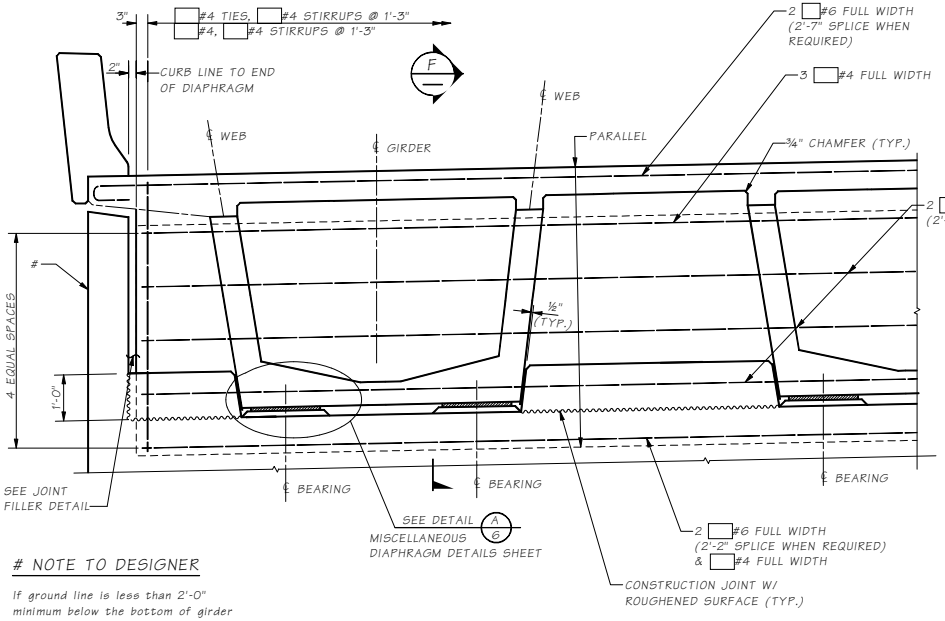
BRIDGE SHEET NO.

SHEET OF SHEETS

SHEET 2

JOB NO. 5.6-A16-4 SR

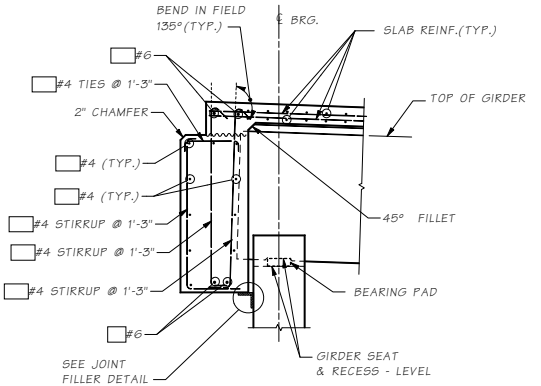
Fri Feb 01 14:28:59 2008



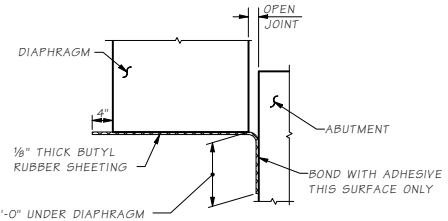
 # NOTE TO DESIGNER

If ground line is less than 2'-0" minimum below the bottom of girder at front face of abutment a curtain wall shall be provided.

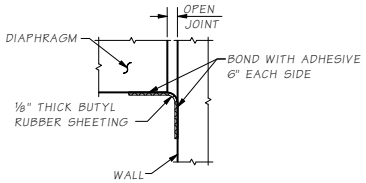
TYPICAL END TYPE "A" DIAPHRAGM AT END PIERS



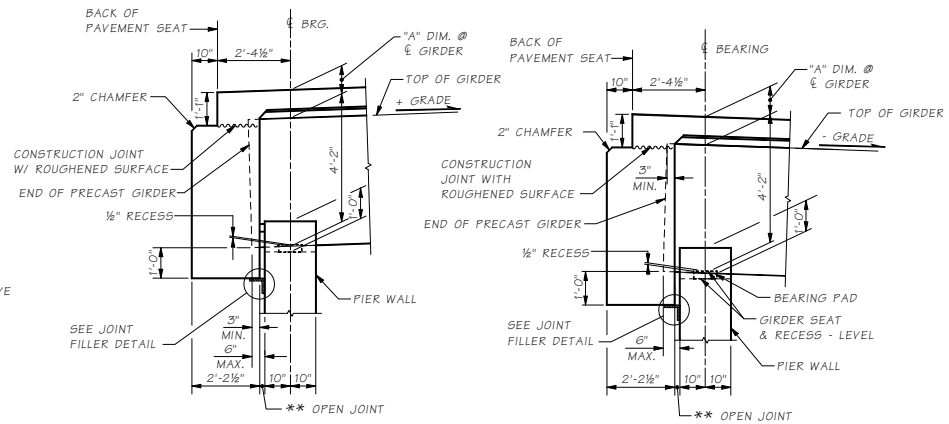
SECTION F



ELEVATION BUTYL RUBBER @ DIAPHRAGM



PLAN VIEW BUTYL RUBBER @ VERTICAL JOINTS



END DIAPHRAGM GEOMETRY

SECTIONS THROUGH END DIAPHRAGMS AT END PIERS
SEE "GIRDER DETAILS" SHEET FOR DIMENSION "A".
ALL LONGITUDINAL DIMENSIONS ARE NORMAL TO SKEW.

BRIDGE LENGTH	JOINT
L≤200	** = 1.5 IN.
200<L≤300	** = 2.0 IN.
300<L≤400	** = 2.5 IN.
L>400	SPECIAL DESIGN

NOTE:

1. GIRDERS SHALL BE HELD RIGIDLY IN PLACE WHEN DIAPHRAGMS ARE PLACED.
2. REINFORCING BAR SHALL BE THREADED THROUGH HOLES IN GIRDERS PRIOR TO PLACING OF EXTERIOR GIRDERS. SEE PLANS FOR "TRAFFIC BARRIER" DIMENSIONS AND LOCATION. SEE "GIRDER DETAILS" SHEET FOR DIMENSION "A".
3. END DIAPHRAGM MAY BE CAST ON GRADE. IF SO, THE UPPER LEG OF THE JOINT FILLER SHALL FORM THE BOTTOM FACE FULL WIDTH.
4. JOINT FILLER TYPE 1 SHALL BE USED TO COVER ALL VERTICAL END DIAPHRAGM JOINTS. EITHER JOINT FILLER TYPE 1 OR JOINT FILLER TYPE 2 SHALL BE USED TO COVER ALL HORIZONTAL END DIAPHRAGM JOINTS.

Bridge Design Engr.	M:\STANDARDS\Girders\Trapezoidal Tubs\TRAPEZOIDAL TUB END_DIA_ON_TUB.MAN				REGION NO.	STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
Supervisor					10	WASH.			
Designed By					JOB NUMBER				
Checked By									
Detailed By									
Bridge Projects Engr.									
Prelim Plan By									
Architect/Specialist	DATE	REVISION	BY	APP'D					

BRIDGE AND STRUCTURES OFFICE

Washington State Department of Transportation

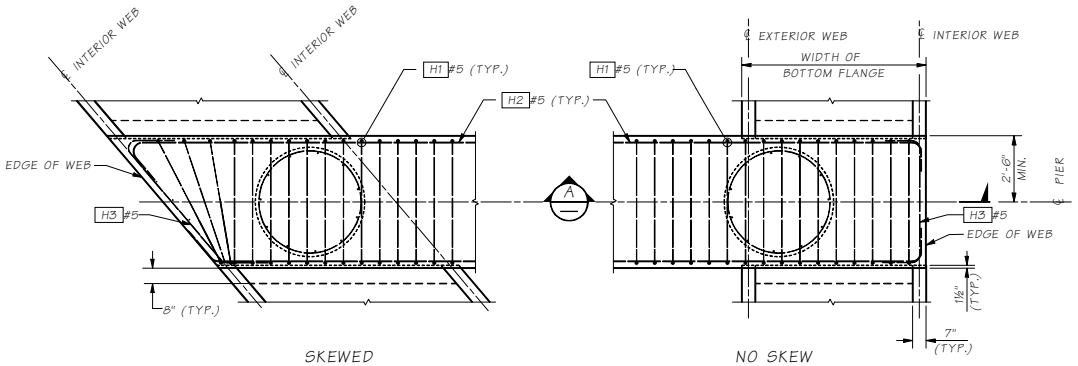
STANDARD PRESTRESSED CONCRETE GIRDERS

PRESTRESSED TRAPEZOIDAL TUB GIRDER END DIAPHRAGM ON GIRDER DETAILS

BRIDGE SHEET NO. SHEET OF SHEETS

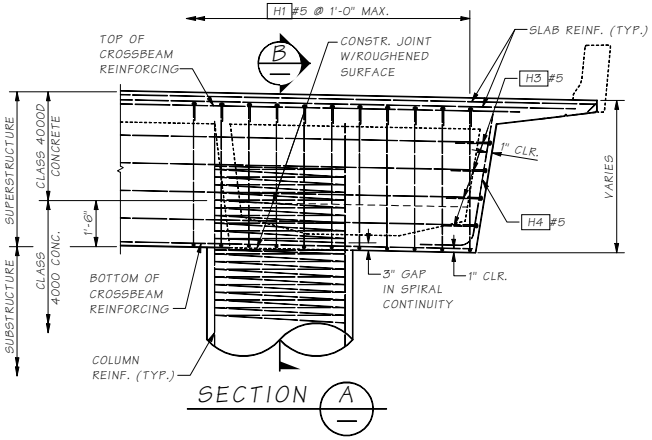
SHEET JOB NO. SR 5.6-A16-5

Fri Feb 01 14:29:06 2008

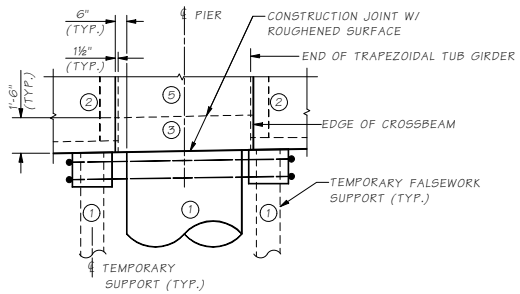


PLAN

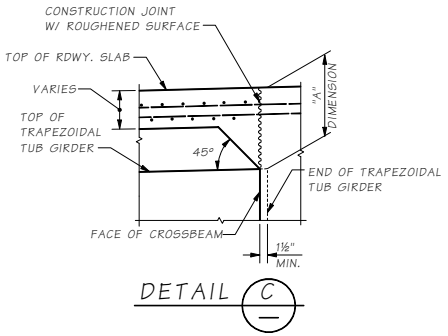
FOR EXTENDED STRAND DETAIL SEE GIRDER SHEET 3.



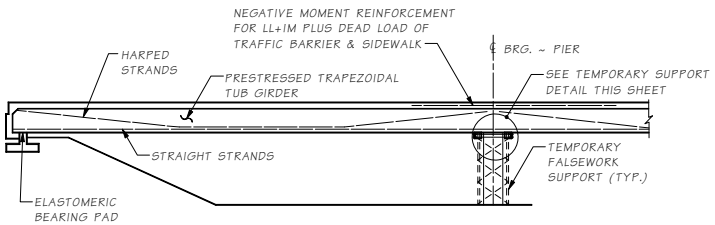
SECTION A



TEMPORARY SUPPORT DETAIL



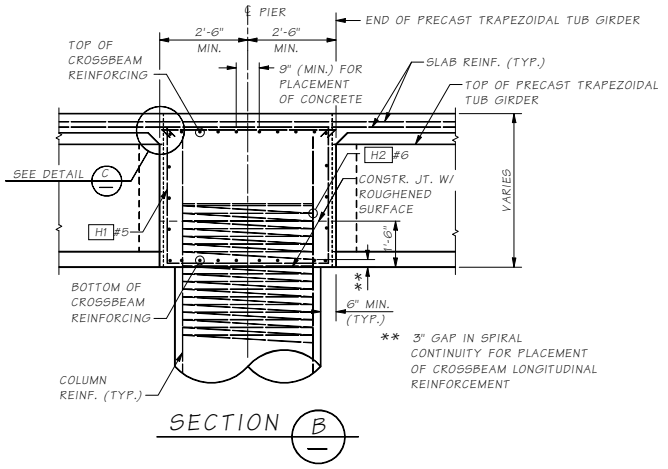
DETAIL C



ELEVATION

CONSTRUCTION SEQUENCE

1. COLUMN & TEMP. SUPPORT
2. PLACE GIRDER ON TEMPORARY SUPPORT
3. CAST DIAPHRAGM STAGE 1
4. CAST ROADWAY SLAB
5. COMPLETE DIAPHRAGM
6. REMOVE TEMPORARY SUPPORT



SECTION B

Bridge Design Engr:	M:\STANDARDS\Girders\Trapezoidal Tubs\TRAPEZOIDAL TUB RAISED CROSSBEAM.MAN				REGION NO.	STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
Supervisor					10	WASH.			
Designed By									
Checked By					JOB NUMBER				
Detailed By									
Bridge Projects Engr.									
Prelim Plan By									
Architect/Specialist	DATE	REVISION	BY	APP'D					

BRIDGE AND STRUCTURES OFFICE

Washington State Department of Transportation

STANDARD PRESTRESSED CONCRETE GIRDERS

PRESTRESSED TRAPEZOIDAL TUB GIRDER RAISED CROSSBEAM DETAILS

BRIDGE SHEET NO. SHEET OF SHEETS

SHEET JOB NO. SR 5.6-A16-6

Fri Feb 01 14:29:14 2008